BioMap and Living Waters

Guiding Land Conservation for Biodiversity in Massachusetts

Core Habitats of Concord

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is not intended for use in state regulations.

Produced by:

Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries and Wildlife
Executive Office of Environmental Affairs
Commonwealth of Massachusetts

Produced in 2004

BioMap and Living Waters:
Guiding Land Conservation for Biodiversity in Massachusetts

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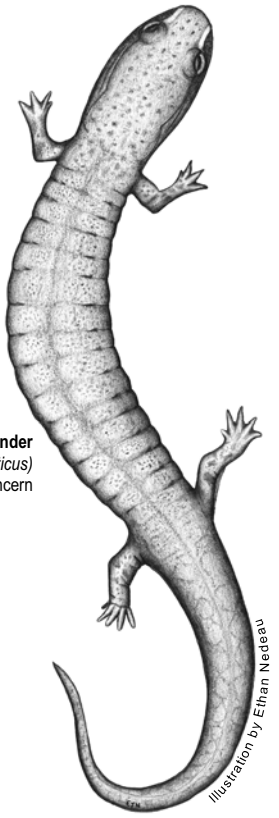
* Depending on the location of Core Habitats, your city or town may not have all of these sections.



Spring Salamander
(Gyrinophilus porphyriticus)
Species of Special Concern

Funding for this project was made available by the Executive Office of Environmental Affairs, contributions to the Natural Heritage & Endangered Species Fund, and through the State Wildlife Grants Program of the US Fish & Wildlife Service.

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For more information on rare species and natural communities, please see our fact sheets online at ***www.nhesp.org***

BioMap and Living Waters:
Guiding Land Conservation for Biodiversity in Massachusetts

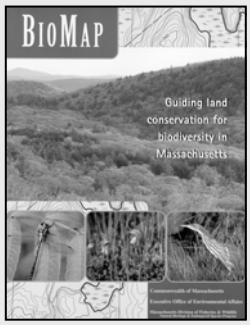
Introduction

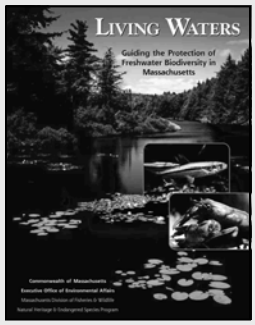
In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generatons to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, ***BioMap*** and ***Living Waters***. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

What is a Core Habitat?

Both BioMap and Living Waters delineate ***Core Habitats*** that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.





Get your copy of the ***BioMap*** and ***Living Waters*** reports! Contact Natural Heritage at 508-792-7270, Ext. 200 or email natural.heritage@state.ma.us. Posters and detailed technical reports are also available.

Core Habitats and Land Conservation

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the ***riparian areas***, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as ***Supporting Natural Landscape*** provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was

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generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, ***Critical Supporting Watersheds*** highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from www.mass.gov/mgis.

Understanding Core Habitat Species, Community, and Habitat Lists

What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the entire Core Habitat, not just the portion that falls within your city or town. For a list of all the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at www.nhesp.org.

The list of species and communities within a Core Habitat contains only the species and natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant

Table 1. The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

BioMap

	Species and Verified Natural Community Types	
Biodiversity Group	**Included in BioMap**	**Total Statewide**
Vascular Plants	246	1,538
Birds	21	221 breeding species
Reptiles	11	25
Amphibians	6	21
Mammals	4	85
Moths and Butterflies	52	An estimated 2,500 to 3,000
Damselflies and Dragonflies	25	An estimated 165
Beetles	10	An estimated 2,500 to 4,000
Natural Communities	92	> 105 community types

Living Waters

	Species	
Biodiversity Group	**Included in Living Waters**	**Total Statewide**
Aquatic Vascular Plants	23	114
Fishes	11	57
Mussels	7	12
Aquatic Invertebrates	23	An estimated > 2500

species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- ***Endangered*** species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- ***Threatened*** species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- ***Special Concern*** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial ***watch list*** of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural communities reflects the documented number and acreages of each community type in the state:

- ***Critically Imperiled*** communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- ***Imperiled*** communities typically have 6-20 sites or few remaining acres in the state.
- ***Vulnerable*** communities typically have 21-100 sites or limited acreage across the state.
- ***Secure*** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.

Legal Protection of Biodiversity

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The ***Massachusetts Natural Heritage Atlas*** shows **Priority Habitats**, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and **Estimated Habitats**, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

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Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific ***fact sheets*** at www.nhesp.org.

Next Steps

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

Protecting Larger Core Habitats

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

Additional Information

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

by Phone *508-792-7270, Ext. 200*

by Fax: *508-792-7821*

by Email: *natural.heritage@state.ma.us*.

by Mail: *North Drive*
Westborough, MA 01581

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: www.mass.gov/mgis

Check out www.nhesp.org for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
  - Field guides
  - Natural Heritage Atlas, and more!

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BioMap: Species and Natural Communities

Concord

Core Habitat BM592

Plants

Common Name	Scientific Name	Status
Violet Wood-Sorrel	*Oxalis violacea*	Endangered

Invertebrates

Common Name	Scientific Name	Status
Elderberry Long-Horned Beetle	*Desmocerus palliatus*	Special Concern
Sensitive Rare Invertebrate		

Vertebrates

Common Name	Scientific Name	Status
Blue-spotted Salamander	*Ambystoma laterale*	Special Concern
Spotted Turtle	*Clemmys guttata*	Special Concern

Core Habitat BM604

Natural Communities

Common Name	Scientific Name	Status
Small-River Floodplain Forest		Imperiled

Plants

Common Name	Scientific Name	Status
Britton's Violet	*Viola brittoniana*	Threatened
Engelmann's Umbrella-Sedge	*Cyperus engelmannii*	Threatened
River Bulrush	*Bolboschoenus fluviatilis*	Special Concern
Violet Wood-Sorrel	*Oxalis violacea*	Endangered

Vertebrates

Common Name	Scientific Name	Status
American Bittern	*Botaurus lentiginosus*	Endangered
Blanding's Turtle	*Emydoidea blandingii*	Threatened

Blue-spotted Salamander	*Ambystoma laterale*	Special Concern
Common Moorhen	*Gallinula chloropus*	Special Concern
King Rail	*Rallus elegans*	Threatened
Least Bittern	*Ixobrychus exilis*	Endangered
Spotted Turtle	*Clemmys guttata*	Special Concern
Wood Turtle	*Clemmys insculpta*	Special Concern

Core Habitat BM637

Natural Communities

Common Name	Scientific Name	Status
Black Gum Swamp		Imperiled
Kettlehole Wet Meadow		Vulnerable

Invertebrates

Common Name	Scientific Name	Status
Elderberry Long-Horned Beetle	*Desmocerus palliatus*	Special Concern

Vertebrates

Common Name	Scientific Name	Status
Grasshopper Sparrow	*Ammodramus savannarum*	Threatened
Upland Sandpiper	*Bartramia longicauda*	Endangered

Core Habitat BM670

Invertebrates

Common Name	Scientific Name	Status
Elderberry Long-Horned Beetle	*Desmocerus palliatus*	Special Concern

Core Habitat BM678

Plants

Common Name	Scientific Name	Status
Small Site for Rare Plant		

BioMap: Core Habitat Summaries

Concord

Core Habitat BM592

This large and minimally fragmented Core Habitat in Concord and Carlisle provides a good opportunity to protect populations of Blue-spotted Salamanders and Spotted Turtles. The diverse wetland complex is also important for invertebrates, including rare dragonflies, and the woodlands are home to the Endangered Violet Wood-Sorrel. With a substantial portion of this Core Habitat protected as conservation land, further habitat protection would help ensure the long-term viability of the rare species found here.

Plants

The Endangered Violet Wood-Sorrel, a purple-flowered herb of rich woodlands, is found within this Core Habitat.

Invertebrates

In the vicinity of Bateman's Pond in Concord and elsewhere within this Core Habitat are wetlands and meadows with thickets of Elderberry that are habitat for the Elderberry Longhorned Beetle, as well as bogs and swamps that are habitat for rare dragonflies. Apparently most of this habitat is unprotected. Located within dispersal distance of this Core Habitat are other areas inhabited by the Elderberry Longhorned Beetle, including Core Habitats in Concord, Lincoln, Sudbury, Lexington, and Waltham.

Vertebrates

This is an area of diverse habitat within which long-term preservation of significant populations of Blue-spotted Salamanders and Spotted Turtles may be possible. Within this roadless area, there is a good interspersion of habitat types, including forested wetlands, small streams, and forested uplands with a moderate density of vernal pools.

Core Habitat BM604

This Core Habitat, located along portions of the Concord and Assabet Rivers, includes two of the few remaining Small-River Floodplain Forest communities in Massachusetts. The area is critical for a diversity of rare plant species, including the state's largest known population of Engelmann's Umbrella-Sedge. The Core Habitat also contains key habitats for rare birds, reptiles, and amphibians. In particular, it supports one of the state's largest remaining populations of Blanding's Turtles, and provides important wetland habitat for a variety of breeding and migrating bird species.

Natural Communities

This Core Habitat contains two of the remaining eight Small-River Floodplain Forests known in the state. Small-River Floodplain Forests are Silver Maple-Green Ash forests occurring on alluvial soils of small rivers and streams. They occur on small tributaries of the Connecticut and Nashua Rivers and along some small rivers of eastern Massachusetts. Although small, the Small-River Floodplain Forests in this Core Habitat are relatively undisturbed. This community type is highly imperiled by the encroachment of invasive exotic plant species. Restoration efforts are necessary at all Small-River Floodplain Forest sites in the state to help ensure the continued existence of this community type.

Plants

This is an extremely important area for rare plants. Four different rare plant species, in many scattered populations, are found growing throughout this Core Habitat. The Threatened Britton's Violet is found in several low areas which flood occasionally. The largest Massachusetts population of Engelmann's Umbrella-Sedge ever recorded is found growing here in a muddy, drained area with other sedges and grasses.

Vertebrates

This Core Habitat contains important habitats for a number of state-protected rare species of birds, reptiles, and amphibians. Included are deep and shallow freshwater marshes that provide breeding and migration habitat for Least Bitterns, American Bitterns, King Rails, and Common Moorhens, especially in the managed impoundments of the Great Meadows National Wildlife Refuge. These wetlands also provide habitat for many other waterbirds and waterfowl, including several species of ducks, herons, and rails. Wetlands and riparian uplands within this Core Habitat also support one of the state's largest remaining populations of Blanding's Turtles. Significant habitat for Spotted Turtles, Wood Turtles, and Blue-spotted Salamanders is present as well.

Core Habitat BM637

This Core Habitat encompasses the grasslands at the Hanscom Air Force Base that provide habitat for Upland Sandpipers and Grasshopper Sparrows. To the west, Bedford Levels provides wetland and meadow habitats for invertebrates such as the Elderberry Longhorned Beetle. Also included in this Core Habitat is the state's largest known Black Gum Swamp.

Natural Communities

This Core Habitat contains the largest Black Gum Swamp known in the state. Black Gum Swamps are forested acidic basin wetlands with accumulations of peat that form hummocks and hollows on the ground. Black Gum is the dominant canopy tree, growing primarily on the hummocks, which results in a relatively open canopy.

Invertebrates

The portion of this Core Habitat southwest of the airport includes the "Bedford Levels", an area of wetlands and meadows with thickets of Elderberry that are habitat for the Elderberry Longhorned Beetle. Apparently most of this habitat is unprotected. Located within dispersal distance of this Core Habitat are other areas inhabited by the Elderberry Longhorned Beetle, including Core Habitats in Concord, Carlisle, Sudbury, Lincoln, Lexington, and Waltham.

Vertebrates

The human-maintained grasslands of Hanscom Air Force Base support small breeding populations of two species of state-protected rare birds, the Upland Sandpiper and Grasshopper Sparrow. These ground-nesting grassland birds will benefit from airfield management practices that minimize mowing between May 1 and July 31 each year, the period when they are incubating eggs and rearing young.

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BioMap: Core Habitat Summaries

Concord

Core Habitat BM670

Invertebrates

Throughout much of this Core Habitat are wetlands and meadows with thickets of Elderberry that are habitat for the Elderberry Longhorned Beetle. Although for the most part surrounded by development, this habitat is located within dispersal distance of other areas inhabited by the Elderberry Longhorned Beetle, including Core Habitats in Concord, Carlisle, Lincoln, Lexington, and Waltham.

Living Waters: Species and Habitats

Concord

Core Habitat LW033

Exemplary Habitats

Common Name	Scientific Name	Status
Lake/Pond Habitat		----------

Core Habitat LW192

Plants

Common Name	Scientific Name	Status
Resupinate Bladderwort	*Utricularia resupinata*	Threatened

Core Habitat LW214

Invertebrates

Common Name	Scientific Name	Status
Eastern Lampmussel	*Lampsilis radiata*	----------
Eastern Pondmussel	*Ligumia nasuta*	Special Concern
Triangle Floater	*Alasmidonta undulata*	Special Concern

Core Habitat LW250

Plants

Common Name	Scientific Name	Status
Lake Quillwort	*Isoetes lacustris*	Endangered

Living Waters: Core Habitat Summaries

Concord

Core Habitat LW033

Mink Pond is a shallow, productive pond with moderate aquatic plant growth and no documented invasive exotic plants. Surrounded by forested uplands, Mink Pond is one of the few ponds in the area that has no development along its shores and little development in its watershed. The pond is likely important habitat for aquatic invertebrates, such as damselflies and dragonflies.

Core Habitat LW192

One of only nine known populations of the rare Resupinate Bladderwort in the state inhabits the peaty margin of this kettle pond. This tiny plant is usually submerged underwater, and purple flowers are produced only when the habitat is exposed during periods of extremely low water. Bladderworts are carnivorous plants, trapping tiny aquatic animals in their pouch-like "bladders." Native freshwater plants like the Resupinate Bladderwort are an important component of aquatic communities, and warrant conservation attention if we are to maintain healthy freshwater ecosystems.

Core Habitat LW214

The Assabet River supports a diverse group of freshwater mussels. Six of the state's twelve mussel species are present here, including the rare Triangle Floater, the rare Eastern Pondmussel, and the uncommon Eastern Lampmussel. These species are found in the clear, moderately flowing reaches of the river, burrowed in the sands, silts, and gravels that collect amongst the cobble riverbed. Both young and old specimens of the Eastern Pondmussel and the Eastern Lampmussel were found here, suggesting these mussels are successfully reproducing. Despite this positive sign, the population densities of mussels in this river are relatively low in comparison with densities found in less developed watersheds. Permanently protecting the riparian land adjacent to the Core Habitat, and careful management of the impacts of upstream development, will help maintain this river habitat.

Core Habitat LW250

Walden Pond contains the only known occurrence of the rare Lake Quillwort in Massachusetts. Quillworts are primitive, submerged freshwater plants, which are so-named for their spiky, quill-like leaves rising from their base.

Help Save Endangered Wildlife!

Please contribute on your Massachusetts income tax form or directly to the

Natural Heritage &
Endangered Species Fund

To learn more about the Natural Heritage & Endangered Species Program and the Commonwealth's rare species, visit our web site at: www.nhesp.org.